Board of Forestry Hearing

September 9, 2009

Anadromous Salmonid Protection Rules

California Department of Forestry and Fire Protection

California Department of Fish and Game

Overview

- Review riparian functions and basis for DFG/CAL FIRE recommendations
- Describe how the DFG/CAL FIRE recommendations affect THP layout and harvest opportunity

Riparian Functions

- Bank stability
- Lg. wood recruitment
- Shade canopy
- Sediment filtration
- Input nutrients, organics, insects
- Habitat for terrestrial species
- Sediment exchange
- Wood exchange
- Heat exchange
- Sediment exchange
- Biotic and nutrient exchange

Core Zone

- Bank stability
- Large wood recruitment
- Shade canopy
- Sediment filtration
- Input nutrients, organic material, food (e.g. insects)
- Habitat for riparian and terrestrial species

Sediment Filtration

"Riparian buffers are effective at limiting sediment delivery to streams from surface erosion, skid trails, yarding ruts, and bank erosion where buffers are employed (primarily on higher order streams)"

Inner Zone

- Large wood recruitment
- Shade canopy
- Sediment filtration
- Inputs of nutrients, organic material, food (e.g. insects)
- Habitat for riparian and terrestrial species

Need for Outer Zone

"A 30 meter wide buffer strip on both sides of a stream (with both equipment exclusion and no tree removal) generally reduces local impacts to a stream that are similar to a "no harvest" level."

Outer Zone

- Wind buffering for Inner Zone
- Microclimate buffering for Inner and Core Zones
- Sediment filtration for adjacent harvest units
- Large wood recruitment
- Habitat for terrestrial species

Habitat for Terrestrial Wildlife

- 14 CCR 897 Implementation of Act Intent

  (b)(1)(B) Maintain functional wildlife habitat in sufficient condition for continued use by the existing wildlife community within the planning watershed

  (b)(1)(C) Retain or recruit late and diverse seral stage habitat components for wildlife **concentrated in the watercourse and lake zones** and as appropriate to provide for functional connectivity between habitats.

SWC Heat Exchange Function

- In fish-bearing waters that are directly downstream of headwater streams the literature indicates that temperature could be protected by buffering the upstream headwater stream segments. The findings of research outside California suggests that buffers extending from 150 to 200 m (500 to 650 ft) upstream may be adequate to protect water temperature in low order streams. Whether this buffer is adequate for California streams and regions would need to be validated**.

SWC Chapter 3, PP 1-2 Identified by SWC as a "Key Information Gap" Chapter 3 P 32

SWC Heat Exchange Function

- Water temperature response to heat input is moderated by inflow from tributaries and groundwater, and the magnitude of response is dependent on the temperature difference between inflow and stream temperature and the relative contribution to discharge.

SWC Chapter 3 P 3

Heat Exchange Function

- Zwieniecki and Norton (1999) found in low gradient streams averaging ten feet width and 0.5 cfs within buffered clearcuts, increased temperature cooled to trend line temperature within 150-300 meters (402-984 feet) downstream.
- Sullivan et al. (1990) suggested for larger streams that 600 meters (1,969 feet) be the minimum length for streams to equilibrate to background temperatures.

Class II-L Prescription (CAZ)

- Lowest 1000’ of Class II-L watercourse
- 0-30’ Core Zone – no harvest
- 30-100’ – 80% OSC retention
- Class II-L watercourse > 1000’ from Class I receives Class II-S prescription

Class II-S Prescription

- Class II-L Watercourses > 1000’ from Class I confluence
- First order, Class II watercourse reaches
- Core zone consistent with Table 4
- Existing FPR prescriptions apply in inner zone

Class II-L Identification

- Office methods used to determine Class II-L and II-S designations
- Field methods may be used to modify determinations. Supported by substantial evidence certified by RPF

Office Based Designation

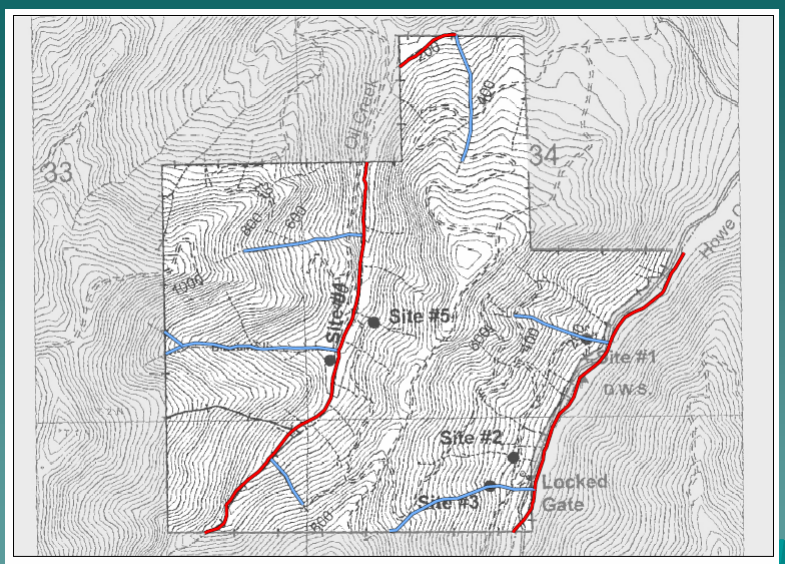
Classify and map all watercourses in the plan area and upslope in the watershed, at a level of detail sufficient to determine stream order of all Class II watercourses in the plan area. Designate second order and higher Class II watercourses as Class II-L watercourses.

Field Based Approaches

1. Documentation of no surface flow contribution to a Class I watercourse later than July 15th following an average year.

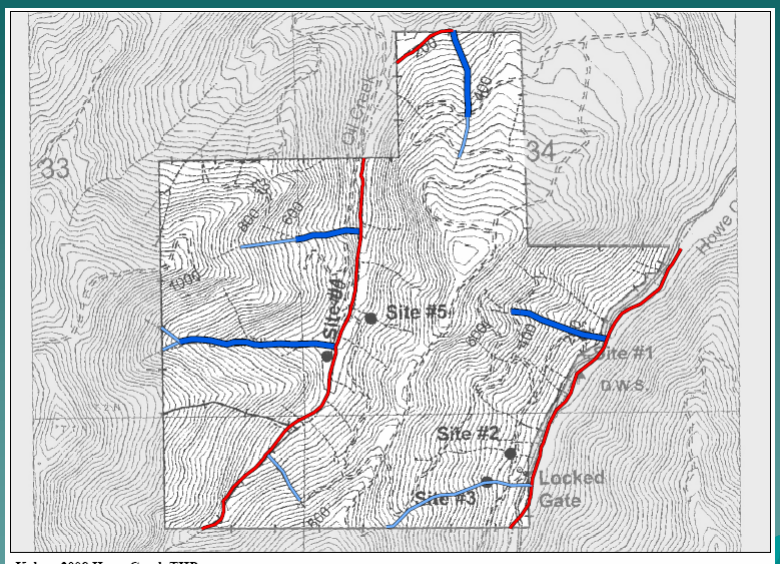
2. Detailed analysis demonstrating water temperature will not be significantly impacted by harvesting.

How Difficult is it to Designate Class II-L and Class II-S Watercourses in the Office?



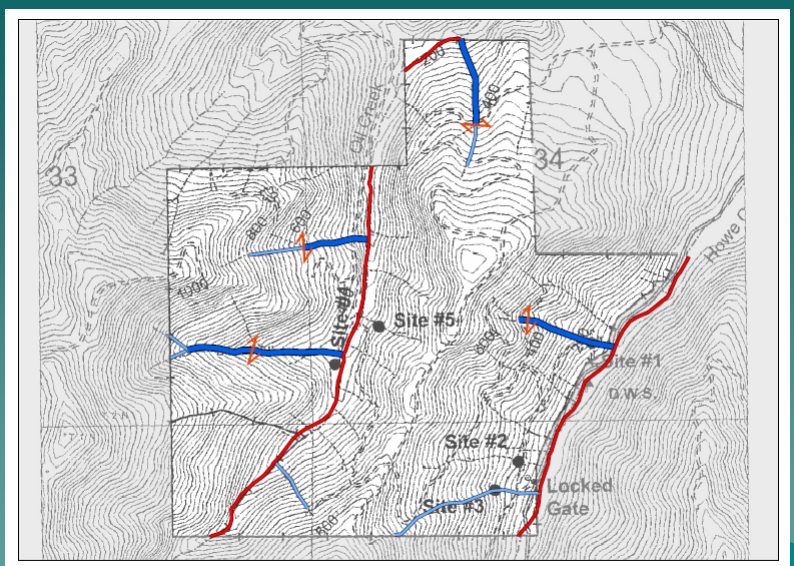
Kahn - 2008 Howe Creek THP
Humboldt County

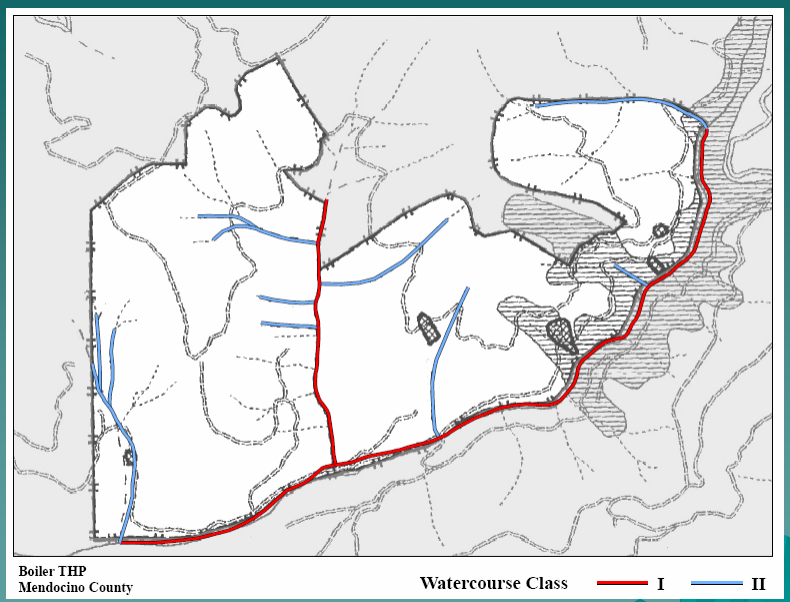
Watercourse Class — I — II

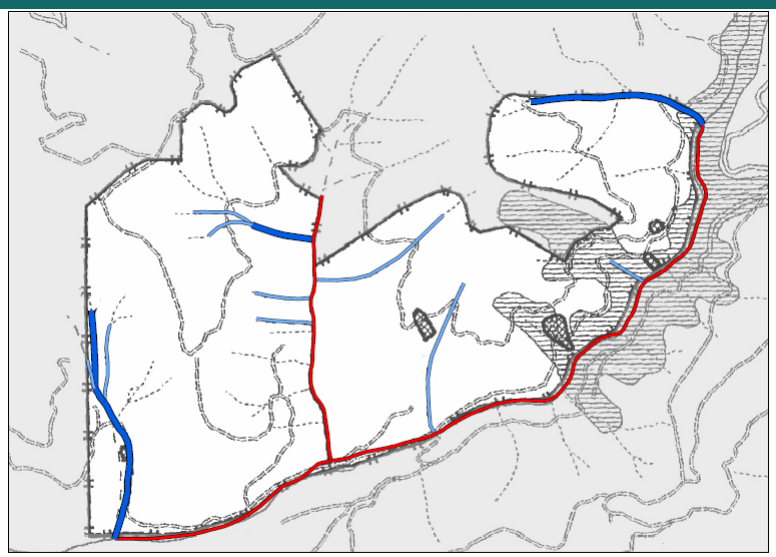


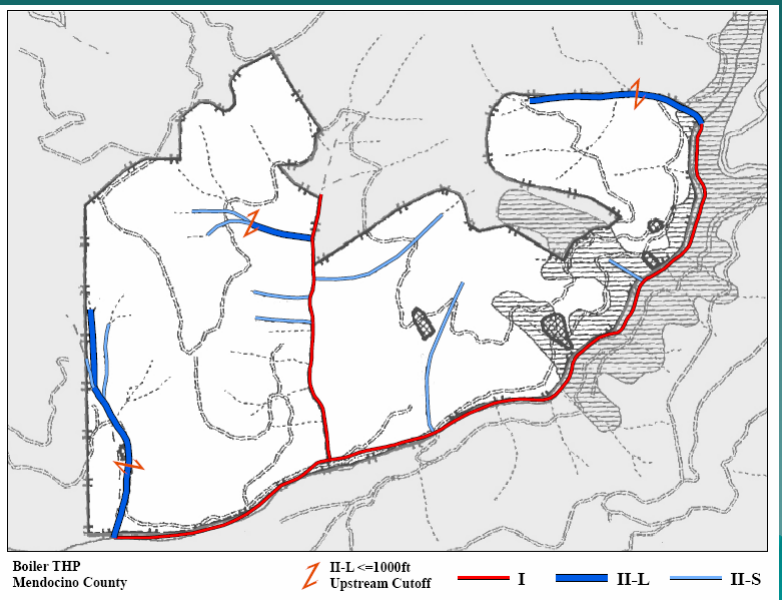
Kahn - 2008 Howe Creek THP
Humboldt County

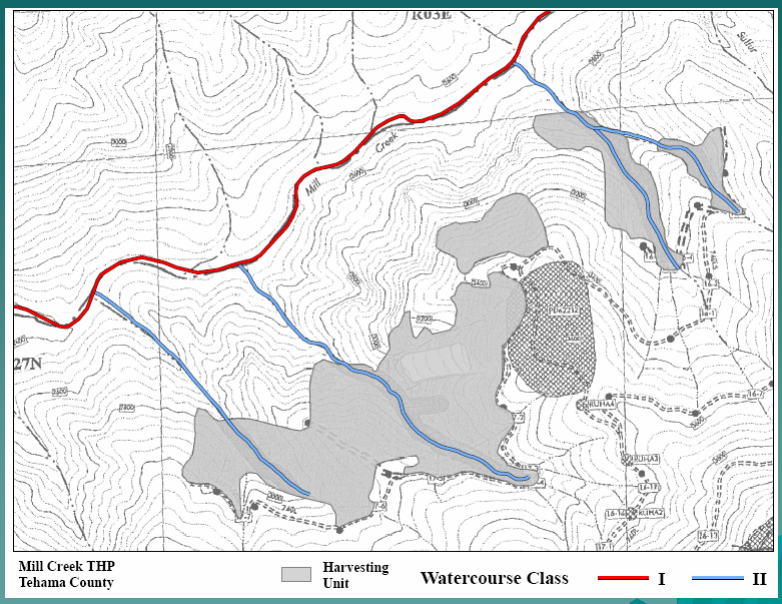
Watercourse Class — I — II-L — II-S

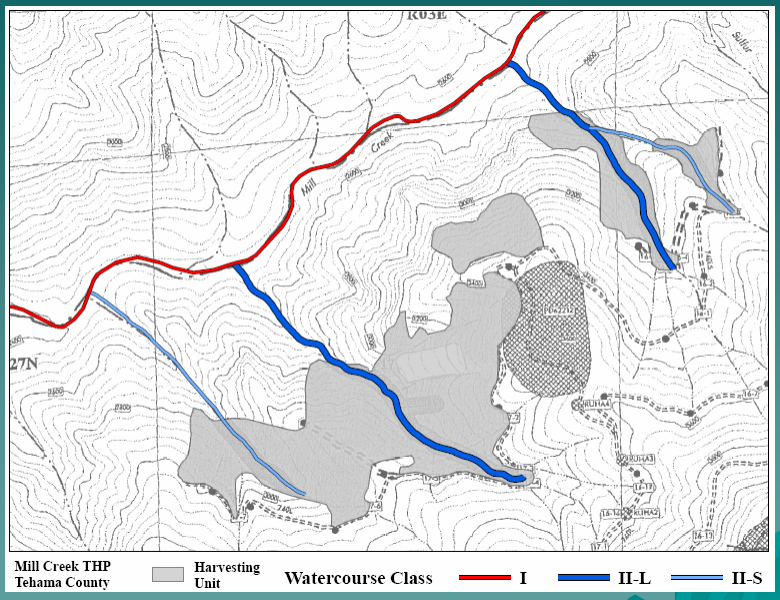

33
34
Oil Creek
Site #5
Site #4
Site #1
G.W.S.
Site #2
Site #3
Locked Gate
Kahn - 2008 Howe Creek THP
Humboldt County
II-L <=1000ft
Upstream Cutoff
I
II-L
II-S


Boiler THP
Mendocino County
Watercourse Class
I
II


Boiler THP
Mendocino County
Watercourse Class
I
II-L
II-S


Boiler THP
Mendocino County
II-L <=1000ft
Upstream Cutoff
I
II-L
II-S


R03E
Mill Creek
27N
Mill Creek THP
Tehama County
Harvesting Unit
Watercourse Class
I
II


R03E
Mill Creek
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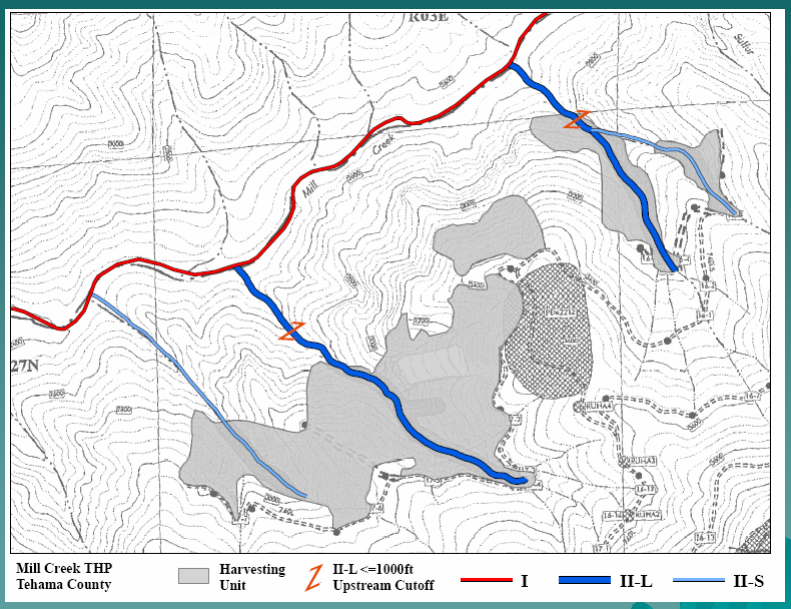
Tehama County
Harvesting Unit
Watercourse Class
I
II-L
II-S



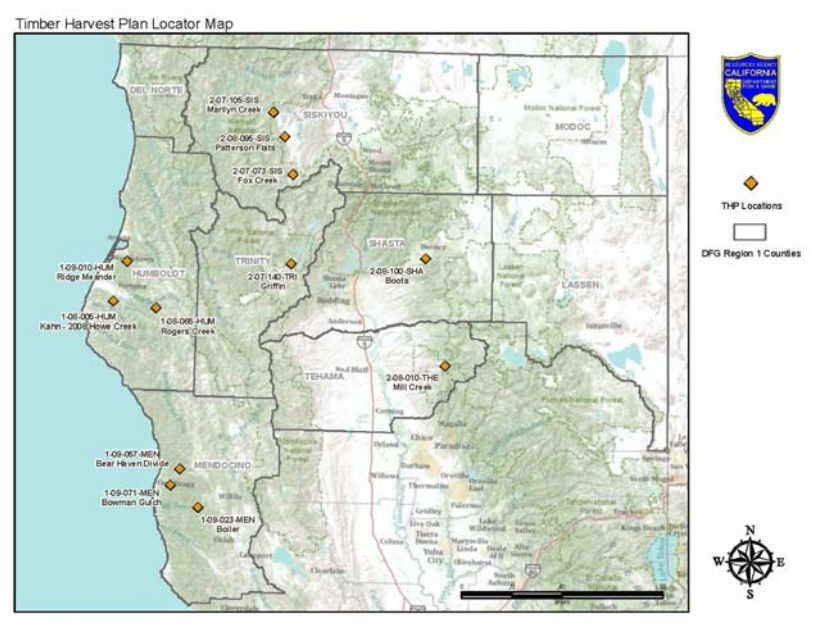
Office based designation of Class II-L watercourses sounds complicated……. But it isn't

What are the effects of the DFG/CAL FIRE recommendations on timber harvesting?

Class II Prescriptions

Table 4. Core and Inner Zone widths.

Water Class	Class II-S (feet)				Class II-L (feet)			
Geographic location	Watersheds in the coastal anadromy zone		Watersheds outside the coastal anadromy zone		Watersheds in the coastal anadromy zone		Watersheds outside the coastal anadromy zone	
Slope class	Core Zone (feet)	Inner Zone (feet)	Core Zone (feet)	Inner Zone (feet)	Core Zone (feet)	Inner Zone (feet)	Core Zone (feet)	Inner Zone (feet)
<10%	0	50	0	50	30	70	20	80
10%-30%	15	35	10	40	30	70	20	80
30-50%	15	60	10	65	30	70	20	80
>50%	15	85	10	90	30	70	20	80



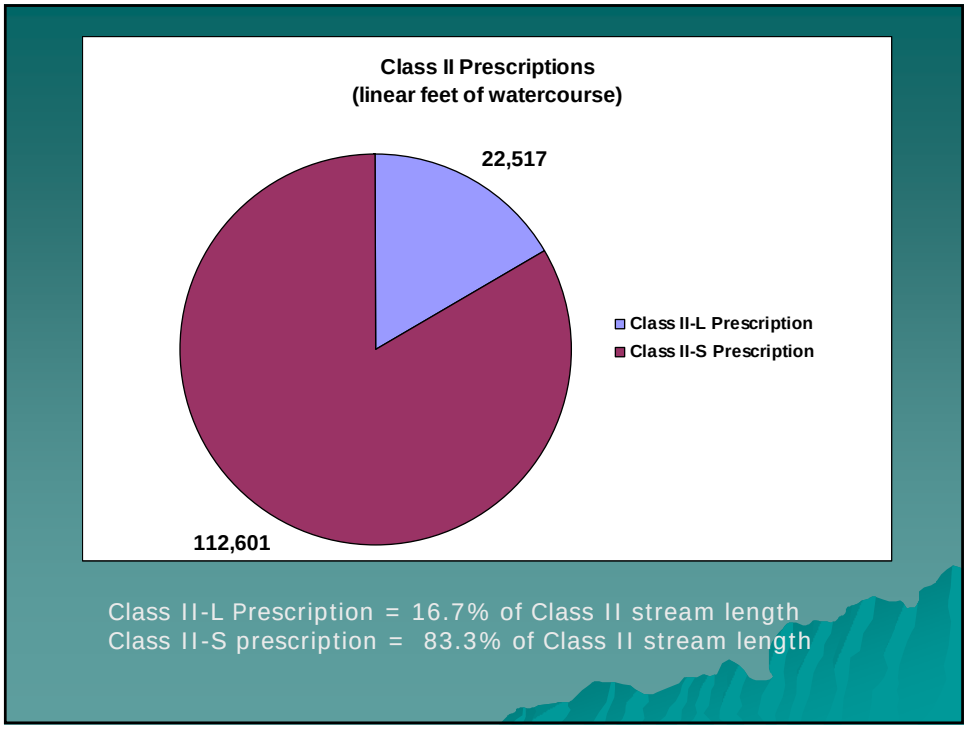
Class I Analysis

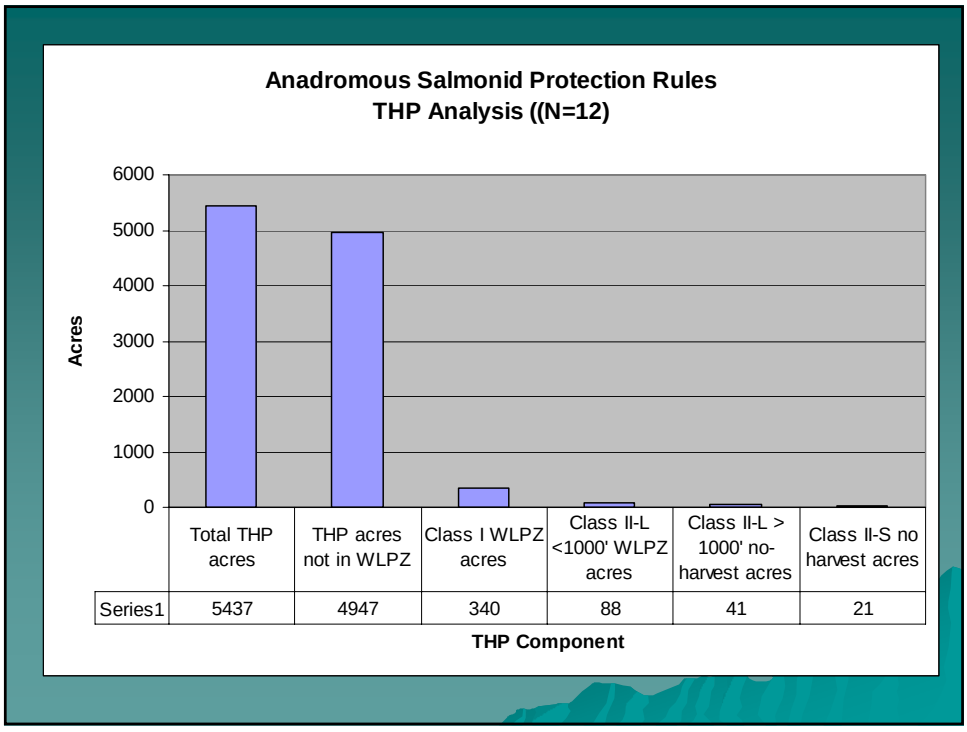
- One side in THP
- Two sides in THP

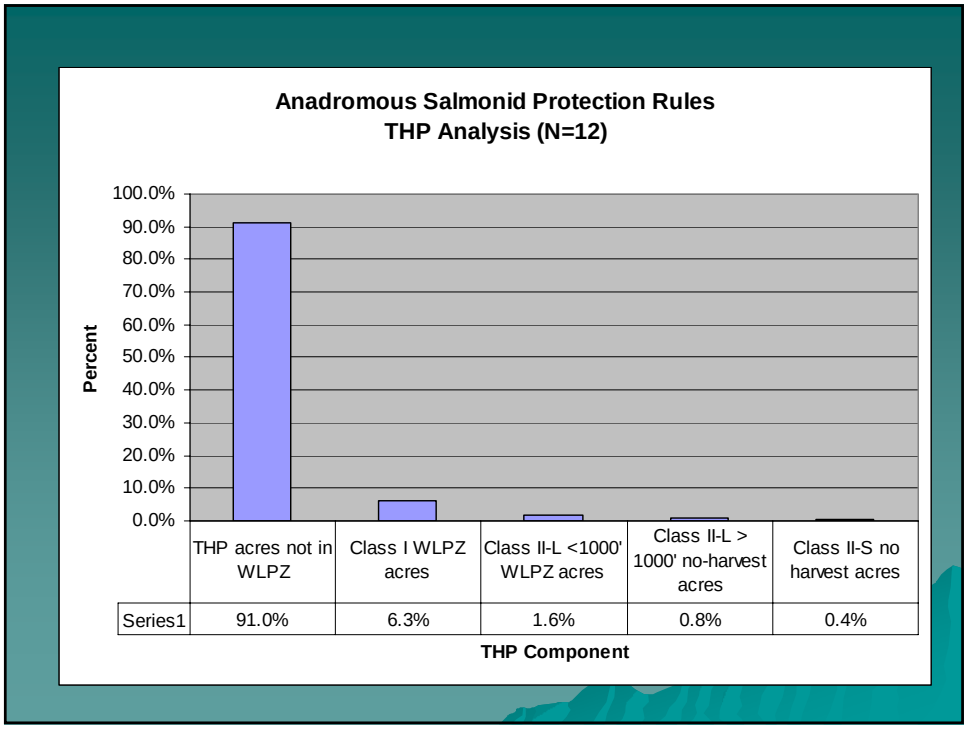
Class II Analysis

- Class II-L < 1000’ , one side
- Class II-L < 1000’ , two sides
- Class II-L > 1000’ , one side
- Class II-L > 1000 , two sides
- Class II-S , one side
- Class II-S , two sides

THP #	Acres	CI+CII Ft	CI, 1S	CI, 2S	CII-L, <=1000' 1S	CII-L, <=1000' 2S	CII-L, >1000' 1S	CII-L, >1000' 2S	CII-S, 1S	CII-S, 2S
1-08-005-HUM	419	17,413	3,373	5,761	0	3,579	0	802	0	3,898
1-08-065-HUM	160	8,833	2,139	0	1,000	1,465	1,094	3,135	0	0
1-09-010-HUM	359	20,938	3,587	887	1,398	2,163	4,805	5,612	1,483	1,003
1-09-023-MEN	713	30,449	11,928	2,733	1,000	1,851	2,518	1,184	409	8,826
1-09-057-MEN	272	17,033	10,932	0	1,574	0	675	0	2,961	891
1-09-071-MEN	90	7,715	5,618	0	0	577	0	0	297	1,223
2-07-073-SIS	271	11,866	3,441	3,266	0	1,973	0	1,426	1,093	667
2-07-105-SIS	244	8,540	0	1,887	1,000	1,418	4,235	0	0	0
2-07-140-TRI	986	33,155	0	1,175	800	544	12,932	12,245	2,218	3,241
2-08-010-THE	406	20,866	0	0	0	175	4,656	12,067	340	3,628
2-08-095-SIS	782	14,928	2,392	4,249	0	2,000	0	5,336	0	951
2-08-100-SHA	735	21,318	13,644	924	0	0	3,629	0	2,724	397
	5437	213,054	57,054	20,882	6,772	15,745	34,544	41,807	11,525	24,725


Class II Prescriptions
(linear feet of watercourse)
22,517
112,601
Class II-L Prescription
Class II-S Prescription
Class II-L Prescription = 16.7% of Class II stream length
Class II-S prescription = 83.3% of Class II stream length


Anadromous Salmonid Protection Rules
THP Analysis ((N=12)
Acres
6000
5000
4000
3000
2000
1000
0
Total THP acres
THP acres not in WLPZ
Class I WLPZ acres
Class II-L <1000' WLPZ acres
Class II-L > 1000' no-harvest acres
Class II-S no harvest acres
Series1
5437
4947
340
88
41
21
THP Component



Analysis Overestimates THP Impact

- Included THPs outside CAZ but applied CAZ prescriptions
- Assumes no field based modifications of Class II-L to II-S prescriptions
- Current FPRs already require tree retention in these areas
- Assumes no site- specific prescriptions

DFG/CAL FIRE recommendations have minor impacts on overall extent of timber harvesting

Options, Options, Options

- 1.3 quadrillion possible outcomes
- Recommendations by DFG and CAL FIRE are consistent with the BOF/FGC Joint Policy goals

Key Points

- Cal Fire and DFG support site-specific options, given standard prescriptions based upon the specific proposals made in our comments
- Recommendations are an effective and pragmatic application of the SWC literature review
- DFG and Cal-Fire recommendations focus habitat protection where it serves riparian functions

Questions?

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